

Sector coupling on a MW Scale or what to do with 500 kg of ‘green‘ H₂ a day?

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The integration of renewable energy sources has created new opportunities for energy storage and utilization, particularly through the use of metal hydrides. This paper will explore the feasibility of sector coupling on a MW scale using a 1 MW electrolyzer and the world's largest (landbased) metal hydride store being built at TU Braunschweig, Germany, with a capacity to produce and store 500 kg of hydrogen a day, respectively. The focus of the „Demonstration Lab“ will be on the application of metal hydrides in the energy sector, specifically in the context of sector coupling. The results will provide insights into the technical and economic viability of using metal hydrides to store and utilize surplus energy, particularly in terms of their performance, durability, and safety. The study will also explore the potential of metal hydrides to enhance energy security, reduce greenhouse gas emissions, and promote the growth of a low-carbon economy. The findings will be of particular interest to those involved in the development of metal hydrides for energy storage and sector coupling and are viable for different research fields, such as fuel cell systems and powertrains.

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